Queclink

QLM100 User Manual

EGPRS/LTE Cat-M1/LTE Cat-NB2 Module

TRACQLM100UM001

Version: 1.00

Driving Smarter IoT

www.queclink.com

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0. Revision History

Version	Date	Author	Description of Change
1.00	2021-04-23	Wokky Lin	Initial

1. Introduction

QLM100 module is an LTE Cat M1/ Cat NB2/ EGPRS module and a baseband processor platform based on ARM Cortex A7. The maximum dominant frequency is up to 800MHz. It provides data connectivity on LTE-TDD/LTE-FDD/GPRS/EDGE networks, and supports half-duplex operation in LTE networks. It also provides GNSS to meet customers' positioning demands. The following table shows the frequency bands ofQLM100 module.

1.1. Reference

Table 1: QLM100 document Reference

SN	Document Name	Remark
[1]	QLM100 data sheet	The data sheet of QLM100

2. Product Overview

2.1. Description

QLM100 is an embedded IOT wireless communication module.

Figure 1. Appearance of QLM100 top

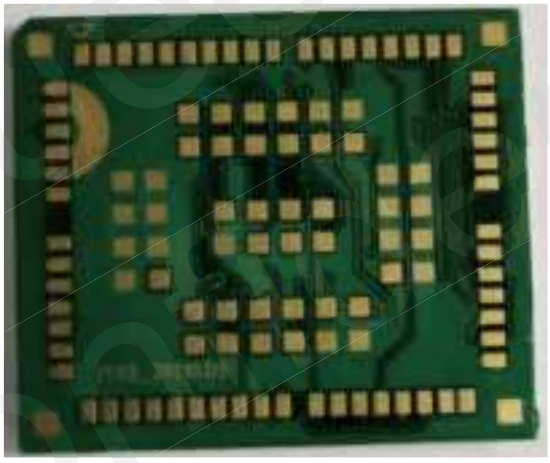

Figure 2. Appearance of QLM100 bottom

2.2. Pin Definition

The sequence and description of the pins are shown in the following figure.

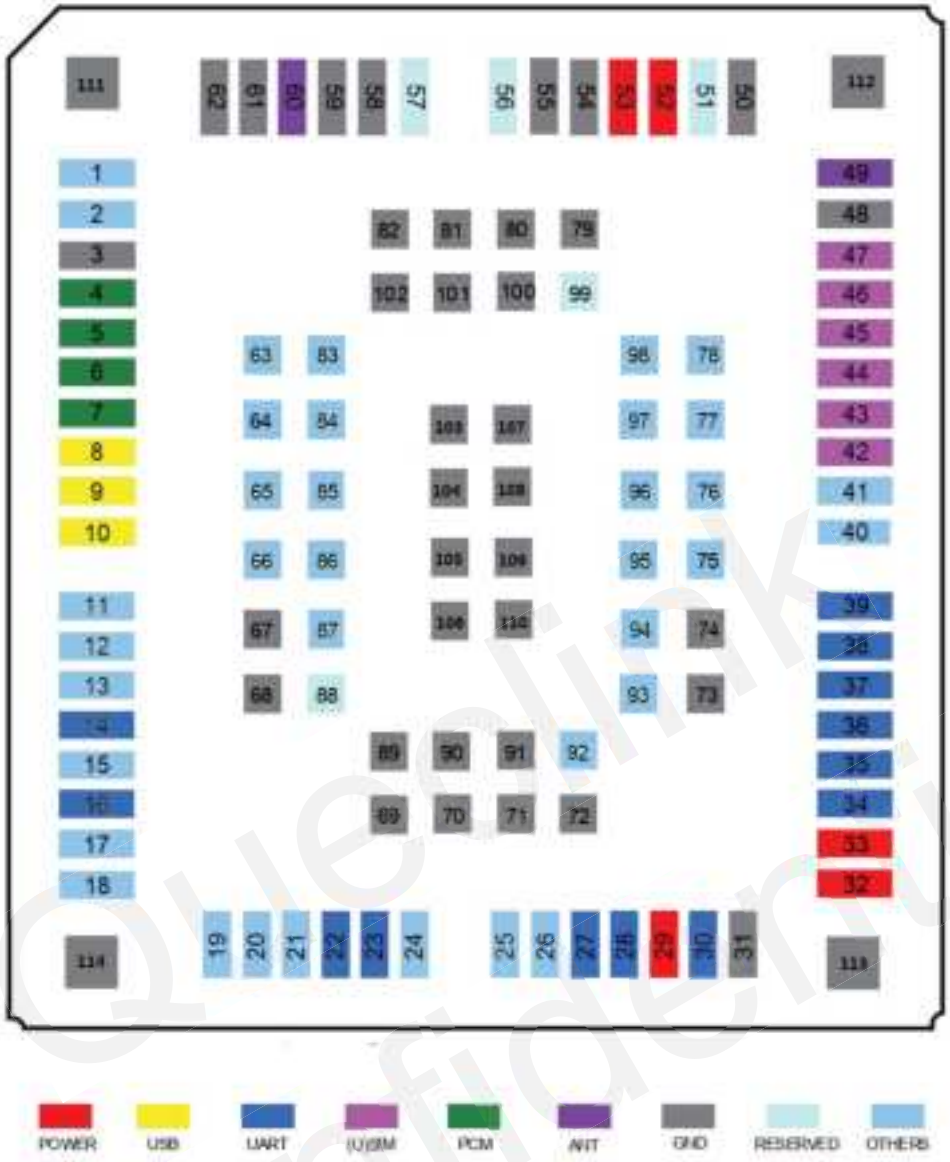

Figure 3. QLM100 Pin map

Table 2: QLM100 Pin description

PIN NO.	QLM100 Net Name	Description
1	PSM_IND	Power saving mode indication
2	ADC1	General purpose analog to digital converter interface
4	PCM_CLK	PCM clock output
5	PCM_SYNC	PCM frame synchronization output
6	PCM_IN	PCM data input
7	PCM_OUT	PCM data output
11	I2C2_SDA	I2C2 serial clock.
12	I2C2_SCL	I2C2 serial clock.
13	GPIO27	General purpose input/

		output interface
14	UART2_TX	Transmit data
16	UART2_RX	Receive data
18	W_DISABLE#	Airplane mode control
19	AP_READY	Application processor sleep state Detection
20	STATUS	Indicate the module's Operation status
21	NETLIGHT	Indicate the module's Operation status
22	DBG_RXD	Receive data
23	DBG_TXD	Transmit data
24	ADC0	General purpose analog to digital converter interface
25	ADC2	General purpose analog to digital converter interface
26	GPIO46	General purpose input/ output interface
27	UART3_TX	Transmit data
28	UART3_RX	Receive data
30	DTR	Data terminal ready (sleep mode control)
34	RXD	Receive data
35	TXD	Transmit data
36	CTS/9205_RTS	Clear to send
37	RTS/9205_CTS	Request to send
38	DCD	Data carrier detection
39	RI	Ring indication
40	I2C1_SCL	I2C1 serial clock.
41	I2C1_SDA	I2C1 serial clock.
42	USIM_PRESENCE	(U)SIM card insertion detection
63	GPIO41	General purpose input/ output interface
64	GPIO44	General purpose input/ output interface
65	GPIO26	General purpose input/ output interface
66	GPIO28	General purpose input/ output interface
76	GPIO37	General purpose input/ output interface
77	GPIO36	General purpose input/

		output interface
78	GPIO38	General purpose input/ output interface
83	GRFC_2	General purpose input/ output interface
84	GRFC_1	General purpose input/ output interface
85	GPIO52	General purpose input/ output interface
86	GPIO25	General purpose input/ output interface
87	GPIO49	General purpose input/ output interface
92	GPIO31	General purpose input/ output interface
93	GPIO33	General purpose input/ output interface
94	GPIO35	General purpose input/ output interface
95	GPIO34	General purpose input/ output interface
96	PON_1	
97	GPIO40	General purpose input/ output interface
98	GPIO42	General purpose input/ output interface
8	USB_VBUS	USB Interface
9	USB_DP	USB Interface
10	USB_DM	USB Interface
75	USB_BOOT	USB Interface
15	PWRKEY	Turn on/off the Module
17	RESET_IN	Reset the Module
29	VDD_EXT	Provide 1.8V for external circuit
32	VBAT_BB	Power supply
33	VBAT_BB	Power supply
43	USIM_VDD	(U)SIM Interface
44	USIM_RST	(U)SIM Interface
45	USIM_DATA	(U)SIM Interface
46	USIM_CLK	(U)SIM Interface

47	USIM_GND	(U)SIM Interface
52	VBAT_RF	Power supply
53	VBAT_RF	Power supply
49	ANT_GNSS	Antenna Interfaces
60	ANT_MAIN	Antenna Interfaces
103	MDM_PS_HOLD	
104	JTAG_TDI	JTAG Interfaces
105	JTAG_SRST_N	JTAG Interfaces
106	JTAG_TMS	JTAG Interfaces
108	JTAG_TDO	JTAG Interfaces
109	JTAG_TCK	JTAG Interfaces
110	JTAG_TRST_N	JTAG Interfaces
3, 31, 48, 50, 54, 55, 58, 59, 61, 62, 67~74, 79~82, 89~91, 100~102,107, 111~114	GND	Ground
51, 56, 57,88,99	RESERVED	RESERVED

3. Getting Started

3.1. Module & EVB

The QLM100_EVB can be used to test module.

Figure 4. EVB & Module

3.2. Power on the Module

Connect the 12V charger with EVB, switch the POWER to ON and then press the power

key. Note: The Force_USB should be on switch to the side as the Figure5 shows.

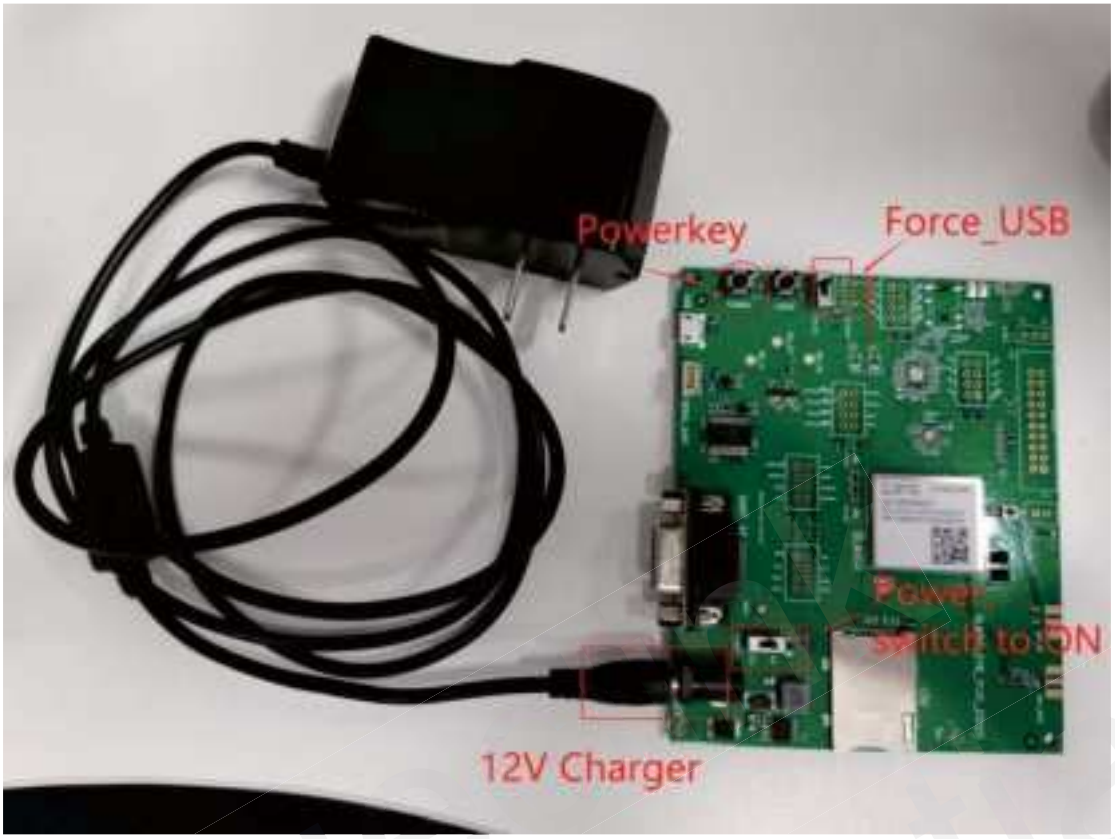

Figure 5. Power on the module

3.3. Send command by the USB

Connect the EVB with micro USB cable interface to send command to module.
Step1. Install USB driver " qud.win.1.1_installer_10065.1" on your PC.
Step2. Power on the device.
Step3. Connect the USB, you will find the two COM port on PC management, select the one except "Qualcomm HS-USB MDM Diagnostics 90B2" on QCOM tool.

Figure 6. Connect USB with module

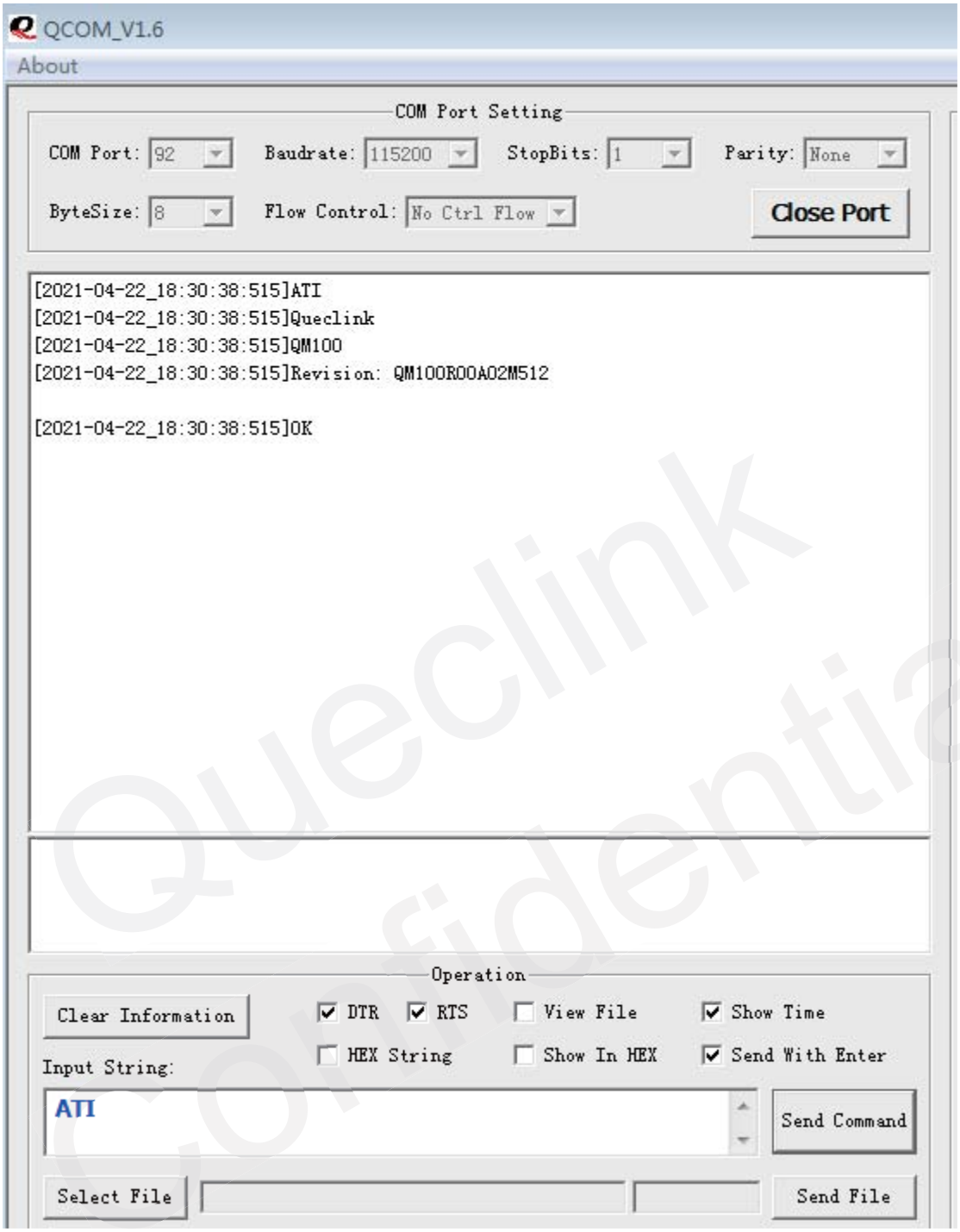

Figure 7. send command by QCOM

3.4. Upgrade the firmware

step1. Connect 12V charger and USB Cable.
step2. Switch the Power to ON, switch the Force_USB to up as Figure 8.
step3. Press the power key to turn on the module.

step4. Use the tool " Queclink_Firmware_Upgrade_Tool_MDM_V1.35" to upgrade.

Figure 8. Upgrade the firmware

ORIGINAL EQUIPMENT MANUFACTURER (OEM) NOTES

The OEM must certify the final end product to comply with unintentional radiators (FCC Sections 15.107 and 15.109) before declaring compliance of the final product to Part 15 of the FCC rules and regulations. Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change.

The OEM must comply with the FCC labeling requirements. If the module's label is not visible when installed, then an additional permanent label must be applied on the outside of the finished product which states: "Contains transmitter module FCC ID: YQD-QLM100 ". Additionally, the following statement should be included on the label and in the final product's user manual: "This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interferences, and
(2) this device must accept any interference received, including interference that may cause undesired operation."

The module is limited to installation in mobile or fixed applications. Separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations.

A module or modules can only be used without additional authorizations if they have been tested and granted under the same intended end - use operational conditions, including simultaneous transmission operations. When they have not been tested and granted in this manner, additional testing and/or FCC application filing may be required. The most straightforward approach to address additional testing conditions is to have the grantee responsible for the certification of at least one of the modules submit a permissive change application. When having a module grantee file a permissive change is not practical or feasible, the following guidance provides some additional options for host manufacturers. Integrations using modules where additional testing and/or FCC application filing(s) may be required are: (A) a module used in devices requiring additional RF exposure compliance information (e.g., MPE evaluation or SAR testing); (B) limited and/or split modules not meeting all of the module requirements; and (C) simultaneous transmissions for independent collocated transmitters not previously granted together.

This Module is full modular approval, it is limited to OEM installation ONLY.
Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change. (OEM) Integrator has to assure compliance of the entire end product include the integrated Module. Additional measurements (15B) and/or equipment authorizations (e.g. Verification) may need to be addressed depending on co-location or simultaneous transmission issues if applicable. (OEM) Integrator is reminded to assure that these installation instructions will not be made available to the end user

FCC Declaration

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two
conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause
undesired operation.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television
reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help
NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20
cm between the radiator and your body. This transmitter must not be co-located or operating
in conjunction with any other antenna or transmitter.

The requirement for KDB 996369 D03

List of applicable FCC rules

FCC CFR Title 47 Part 22 Subpart H CFR Title 47 Part 22 Subpart H
CFR Title 47 Part 15 Subpart B

Summarize the specific operational use conditons

This module has been granted Single Modular Approval for mobile applications. OEM integrators for host products may use the module in their final products without additional FCC certifications if they meet the following conditions. Otherwise, additional FCC approvals must be obtained.
The host product with the module installed must be evaluated for simultaneous

transmission requirements The user's manual for the host product must clearly indicate the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines. To comply with FCC regulations limiting both maximum RF ourput power and human exposure to RF radiation.

A label must be affixed to the outside of the host product product with the following statement: This device contains FCC ID: YQD-QLM100

The final host/Module combinations may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorizaed for operation as a Part 15 digital device.

Information on test modes and additional testing requirements

Consider multi-transmission mode in the host.

Additional testing, Part 15 Subpart B disclaimer

by FCC Part 15 Subpart B. The host be evaluated by the FCC Subpart B.

Single module procedures

The module has meet the requirements to satisfy the conditions.

Trace antenna designs

Please refer to the RF Link’s schematic diagram and refer to PCB Layout.

RF exposure considerations

The host device manufacturer should confirm that a separation distance of 20cm or more should be maintained between the antenna of this host device and persons during the host device operation.

Antennas

The device itself has antenna, customer can use the PIFA antenna with antenna gain isn't greater than 3 dBi.

Lable and compliance information

If this certified module is installed inside the host device, then the outside of the host must be labeledwith "Contains FCC ID: FCC ID: YQD-QLM100 "